

## A LOOK AT THE METHODOLOGICAL ISSUES INVOLVED IN THE GREEK-TURKISH ARMS RACE HYPOTHESIS

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### RÉSUMÉ

Malgré le fait que la Grèce et la Turquie sont tous les deux membres de l'OTAN, leurs relations sont minées par des différends et des conflits. Ces deux pays allouent une part substantielle de leur économie nationale à la défense. Dans un passé rapproché, des tensions et des frictions concomitantes les ont amené au seuil de la guerre. Même pendant la période de l'après guerre froide, leurs dépenses militaires ont continué d'augmenter en termes réels à un moment où d'autres membres de l'OTAN ont diminué leurs dépenses dans ce domaine. L'hypothèse d'une course aux armements entre la Grèce et la Turquie a été le thème de plusieurs études empiriques qui abordent les questions de la défense du point de vue économique, mais les résultats de telles études sont loin d'être concluants. Cet article aborde certaines questions méthodologiques relatives à la course aux armements entre la Grèce et la Turquie.

### ABSTRACT

Greece and Turkey are both members of the NATO Alliance, yet disputes and conflicts mar their bilateral relations. In the recent past, concomitant tensions and frictions have brought the two countries to the brink of war. Both countries allocate a substantial part of their national economy to defence. Even during the post bipolar period, their respective military expenditures have continued to grow in real terms at a time when other NATO members have been trimming their defence spending. The hypothesis of a Greek-Turkish arms race has been the subject of a number of empirical studies in the defence economics literature, but the issue of the empirical verification of such a race remains at best inconclusive. This paper addresses some methodological issues which hinder the empirical examination of the Greek-Turkish armaments race.

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## INTRODUCTION

The ongoing Greek-Turkish rivalry is well documented in the international relations literature and in recent years has also attracted considerable attention in the defence economics literature.<sup>1</sup> Both countries are members of NATO and Greece is also a member of the EU and the Euro area. Compared to other NATO members, they allocate a substantial part of their national economy to defence uses on an annual basis. Comparatively, both Greece and Turkey are the most militarized countries in terms of the human and material resources that they allocate to national defence. For example, in 1999 the Greek and Turkish defence burdens (military expenditure expressed as a share of GDP) were 4.8% and 5.4% respectively while the NATO average for the same year was 2.2%.

In defence economics literature, the strategic interaction, tense bilateral relations and ongoing weapons accumulation by both countries has caught the interest of defence economists, who query whether the hypothesis of a Greek-Turkish arms race can find a modicum of empirical verification. In particular, the arms race hypothesis has been the subject of a number of empirical studies using various econometric techniques. Researchers have set out to investigate whether an arms race between the two NATO allies can be established empirically. At best, the results reported are inconclusive since they give results both 'for' and 'against' the hypothesis of a systematic arms race. This situation is due in part, at least, to the different time periods covered by the various studies, the different econometric methodologies employed and the different variables used.

Competition between countries may take various forms. An arms race is a manifestation of acute external security concerns which arise from tense, antagonistic bilateral relations, conflicting national interests, and perceptions of mutual hostile intentions. These combine with the concomitant military threat perceptions in the minds of the defence planners of each rival. An armaments race between antagonistic and potentially hostile states is a complex and multidimensional problem. It is essentially understood as a dynamic process of inter-

action between states that leads to a continuous build – up in armaments. As Leidy and Staiger<sup>2</sup> point out, political, technological, economic, psychological, historical and geographic elements among others come into play in this dynamic process.

In the case of Greece and Turkey, almost all studies investigate the presence (or absence) of an action-reaction type régime which points to an arms race between the two countries. This article addresses issues related to the observed weapons build-up by both Greece and Turkey and examines the difficulties associated with establishing in empirical fashion an action-reaction process between the two countries. We proceed with a brief comparative presentation of Greek and Turkish military expenditure data which we then use in the discussion of the arms race hypothesis highlighting the important methodological issues and practical problems associated with the empirical investigation of an armaments race.

## GREEK AND TURKISH MILITARY EXPENDITURES

Both Greece and Turkey belong to the same military alliance and appear to have more or less similar international orientations. Their bilateral relations however, are marred by animosity, tension and mistrust. Of course, important improvements have been witnessed in recent years. Nevertheless, the major issues dividing the two countries remain unresolved and could in the future re-ignite tension and conflict. By NATO standards, on the basis of the human and material resources they yearly allocate to defence uses, Greece and Turkey are highly militarized. Despite the fact that in terms of per capita GDP, they are two of the poorest NATO members, both have almost invariably ranked as the alliance members with the highest defence burden; i.e., the share of defence expenditure in GDP. In 1999, defence spending stood at 4.8% of the GDP in Greece and 5.4% in Turkey, compared to a NATO average of 2.2%. Indeed, this has been the case ever since 1974, when the Turkish invasion of Cyprus marked an important escalation in their antagonistic and tense relations.

As it can be seen from both Figure 1 and Table 1 (which summarizes Figure 1), the defence burden series of both countries oscillate around the NATO average up to 1974. Following the Turkish invasion of Cyprus, the defence burden in both countries has remained - with the exception of a couple years in the case of Turkey - well above the NATO average to the extent that the latter may serve as a benchmark for comparison purposes hereafter. In particular, in the post-74 period defence expenditure in Greece amounts to an average 5.7% of GDP and 4.4% in the case of Turkey while the NATO average for the same period is about 3.2%.

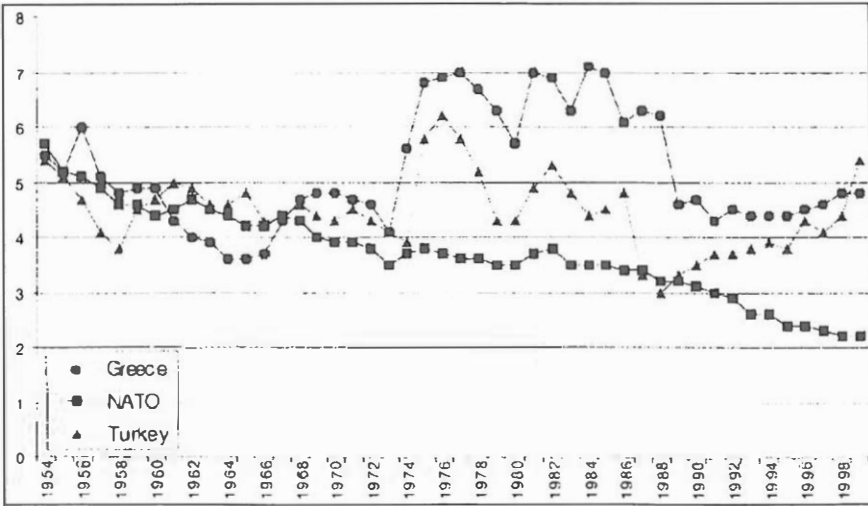
Even more interesting to observe is the fact that in the post bipolar period (1990-99), their respective defence burdens do not show signs of downward trends. In fact they follow an upward path, more pronounced in the case of Turkey, less so in the case of Greece. In contrast, the NATO average exhibits a steady downward trend averaging 2.6% for this period while the respective averages are 4.5% for Greece and 4.1% for Turkey.

If the share of defence expenditures in GDP can act as an indicator of defence needs (plus the concomitant allocation of resources to defence by a country) as these are determined by the strategic international environment then it would appear that Greece and Turkey both face increased defence needs when compared to the rest of NATO. Whether these may be attributed to their tense bilateral relations is a different issue. The fact that both time series (in other words, Greek and Turkish defence spending as a percentage of GDP) follow a similar path in the post-1974 period when both series start diverging from the NATO average, may be taken as an indication that their respective defence needs are at least partially determined by their security concerns about each other. Whether or not they have engaged in a systematic arms race is a totally different question that can not be answered only on the basis of the level and trend of their respective defence burdens, as it will be discussed in the next section.

**Table 1: Defence spending as a percentage of GDP**

	<i>NATO</i>	<i>Greece</i>	<i>Turkey</i>
1954-99	3.7	5.2	4.5
1954-73	4.4	4.6	4.6
1974-99	3.2	5.7	4.4
1990-99	2.6	4.5	4.1

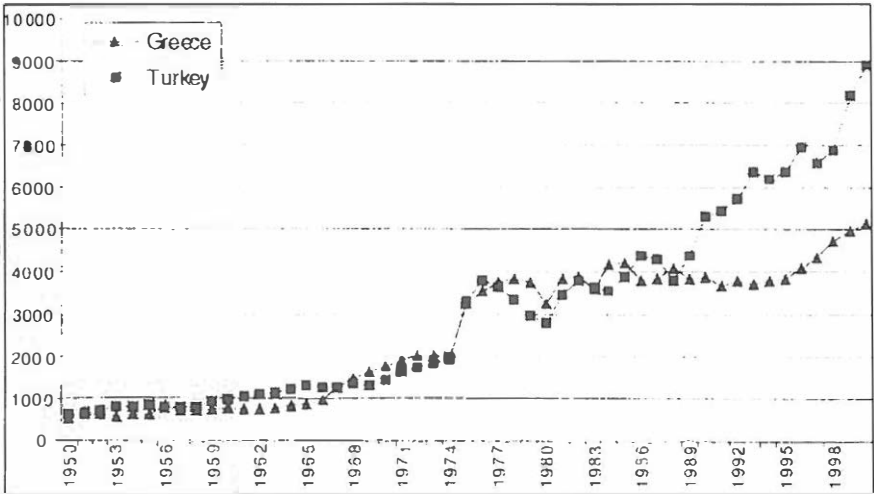
**Figure 1: Defence spending as a percentage of GDP in NATO, Greece and Turkey**



A similar picture emerges if the absolute level of military spending is used. As it can be seen from Figure 2, both Greek and Turkish defence expenditures have in real terms followed an upward trend throughout the post World War II period. The immediate impact of the 1974 Turkish invasion of Cyprus can easily be observed in Figure 2. In real terms, Greek military spending increased by about 69% between 1974-75, by 85% between 1974-76 and by 96% between 1974-77. The corresponding increases in Turkish military spending in

real terms were 66% in 1974-75, 90% in 1974-76 and 83% in 1974-77. Overall, during 1950-2000 in real terms Greek military spending increases by about 965% and Turkish by about 1426% while in the post-74 period, i.e. 1974-2000 the corresponding increases are 267% and 447% respectively. As it can be observed in Figure 2 the two time series start to diverge towards the late 1980s when Turkish military spending increases at a faster rate than Greek defence expenditure which nevertheless also exhibits an upward trend albeit less pronounced.

**Figure 2: Greek and Turkish defence spending 1950-2000\***

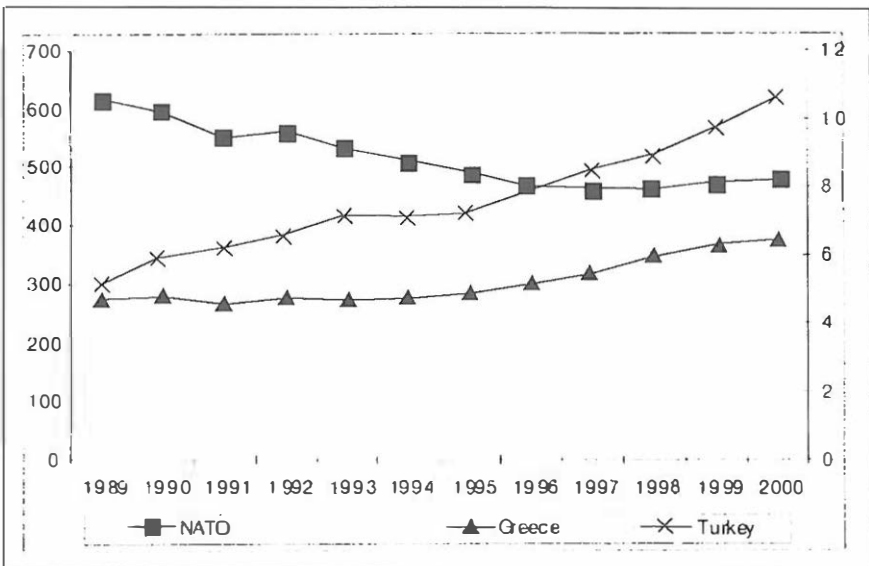


\* in constant prices

Again, based on this purely descriptive analysis, one can not help but observe a strikingly similar path in the trend of the two time-series which could be taken as a sign of weapons competition between the two, given the tense bilateral relations and the issues of friction that divide them. Even more interesting is the fact that both Greek and Turkish military spending have continued to grow during the post bipolar era. Again, using NATO as the benchmark, during 1989-2000

total NATO defence spending has declined in real terms by about 23%. In contrast, Greek defence expenditure grew by about 35% while Turkish military expenditure increased by as much as 113% in real terms. These trends are shown graphically in Figure 3. Contrary to the dominant international trends, at a period when most countries had drastically reduced their defence budgets following the relaxation of international tensions, Greece and Turkey continued to increase their defence expenditures, thus forfeiting the opportunity to yield the so-called peace dividend.

**Figure 3: Military spending in NATO, Greece and Turkey 1989-2000**



\* SIPRI data in constant 1998 prices

## CAN A WEAPONS COMPETITION BE ESTABLISHED?

In the previous section, we used NATO as a benchmark for comparison purposes and briefly examined Greek and Turkish defence expenditures while highlighting trends and similarities that could be indicators of a systematic arms race between the two countries. In this section we examine and discuss issues and problems associated with the hypothesis of a Greek Turkish armaments race and its empirical verification.

An armaments race may be defined as a dynamic process of interaction between states that leads to a continuous build-up in armaments. However, when it comes to the empirical examination of the presence or absence of weapons competition between two rivals, some fundamental methodological issues arise. Some of these issues will be treated here in the context of the Greek-Turkish defence and security concerns, priorities and their weapons build-up.

One major problem that arises when examining arms races is the choice of a measure of defence capability. In other words, what variable should one use in order to test for weapons competition between rivals such as Greece and Turkey and to analyze the dynamics of this interaction? Given the problems associated with data availability in the defence sector, most studies use military expenditures as the best proxy measure of defence capability available. The question is whether such expenditures can be used as the variable that encapsulates the dynamics of an armaments race. It has been argued that military expenditures can be a misleading measure of defence. McCubbins<sup>5</sup> notes, for instance, that the military expenditures of two nations engaged in weapons competition could remain unchanged while intense arms competition may be taking place between one, two or more weapons systems. Similarly, Anderton<sup>6</sup> points out that weapons stocks could be rising even though military expenditures are falling and *vice versa*. This situation stems from the fact that military expenditure is a flow whereas the military capability of a state is determined by the stock of weapons that it possesses. If, for example, the flow of expenditures to weapons exceeds that needed for replacement then the



stock and, logically, military capabilities will be increasing even if the flow has fallen compared to the previous period. As the same author notes, significant parts of military expenditures are allocated to uses other than procurement and maintenance that directly affect defence capability. Military expenditures are an aggregate of many individual expenditures including, for example, payments to retired military personnel who do not contribute directly to military strength. Furthermore, expenditures that affect the military capability of a country are not included in this aggregate. Spending on paramilitary forces such as the *gendarmérie* in the case of Turkey, or the coast guard is not included in the budget of defence ministries. Yet both the *gendarmérie* and the coast guard are part of a country's defence planning and contribute to its total defence, or military capability. There are, therefore, important limitations associated with the use of military expenditures as a measure of defence capability in arms race studies. However, although the optimum case would be to use the data defence policymakers and military planners use, given the absence of such data we will also resort in using military expenditures in this case study.<sup>5</sup>

Based on the purely descriptive analysis of the previous section, a strongly similar trend in the military expenditure series of the two countries is observed (Figure 2). The two series appear to follow a common pattern until the late 1980s when they start to diverge. At that point, Turkish military spending increases at a faster rate than Greek defence spending, which, nevertheless, exhibits an upward trend, albeit less pronounced. The observed common pattern and trend of the two series is further verified if we estimate the correlation coefficient<sup>6</sup> of the two. Although strong correlation does not imply the presence of a causal relation and hence an armaments race, it nevertheless is a useful tool to explore the presence of common trends between time series. Not surprisingly, the value of the estimated correlation coefficient for the whole post-war period is quite high (a value of 0.903) suggesting strong correlation between the two defence expenditure series.

**Table 2: Correlation between Greek and Turkish military spending**

	<i>Correlation coefficient</i>	<i>p-value</i>
1950-2000	0.903	0.000
1950-1973	0.909	0.000
1950-1990	0.961	0.000
1974-2000	0.722	0.000
1974-1980	0.842	0.017
1974-1990	0.662	0.004
1980-1990	0.323	0.332
1980-2000	0.692	0.001
1990-2000	0.905	0.000

Further correlation analysis for different sub-periods yields interesting results. As can be seen in Table 2, the estimated correlation coefficients vary from 0.323 for the period 1980-90, 0.662; for 1974-90, 0.722; for 1974-2000, 0.842; for 1974-80, to 0.961 for the period 1950-90. This changing degree of correlation between the two series suggests any relation that the correlation analysis might reflect has not remained constant throughout the post-war period. Indeed, the correlation coefficient of 0.961 for the period 1950-90, which is close to unity, points to extremely strong correlation, whereas the coefficient of 0.323 for the period 1980-90 indicates the absence of any correlation between Greek and Turkish military expenditures for this period. Interestingly enough, due to a number of developments during this decade, one would intuitively expect to find the opposite. For most of this decade the “*anti-Turkish*” rhetoric of the PASOK governments in Greece was quite intense, although important efforts at *rapprochement* did take place. However, in 1985, the *New Defence Doctrine* was officially declared. The doctrine regards Turkey as the main threat to Greek national interests. Note that this period also coincides with

serious incidents which mark significant escalations of military tensions, notably the 1987 crisis over proposed oil explorations in the Aegean by Turkey that brought the two countries to the brink of war.

One difficulty in establishing an action-reaction régime between Greek and Turkish military spending is that governments do not necessarily respond instantaneously to their rivals' military acquisitions. As a result, the defence expenditure of one rival may respond with a time lag to the other's armaments or indeed to escalations in their rivalry such as military crises and incidents that present peaks in their animosity. Following the 1974 invasion of Cyprus, Greek military expenditure in the four years that follow the invasion increases by about 100.4% and Turkey's by 67.9% (Table 3). However, a different reaction is observed in the case of other military escalations.

Despite the importance of the 1987 military crisis, the effect that can be traced on military spending is mixed. In 1987-88, the year following the crisis, defence spending increases in Greece by about 5.7% but falls by about -11.9% in Turkey. Even allowing for a time delay in the response, Greek defence spending between 1987-89 declines marginally by 0.9% (the reverse of what one would intuitively expect to find) while Turkish military expenditure marginally rises by 1.9%. Allowing for three years to elapse, Greek military expenditure between 1987-90 marginally rises by 0.2% while the equivalent change for Turkey is a 23% increase (Table 3). The serious fiscal constraints that Greece faces during this period may be cited as one explanation of the absence of any significant response in the level of defence spending following the 1987 crisis. On the other hand, the increase in Turkish expenditures may be attributed not so much to defence concerns over Greece but rather to the emergence of a different issue in the Turkish security agenda and priorities in the late 1980s, namely the Kurdish PKK guerillas and the war against them, which placed substantial upward pressures on the Turkish defence budget.

Table 3: Impact of crises on military expenditures

Cyprus 1974							
<i>Greece</i>				<i>Turkey</i>			
% change from crisis		Annual % change		% change from crisis		Annual % change	
base year				base year			
1970-74	7.8	1971	5.8	1970-74	39.7	1971	17.0
1971-74	1.9	1972	6.6	1971-74	19.3	1972	3.9
1972-74	-4.4	1973	-0.2	1972-74	14.8	1973	5.0
1973-74	-4.2	1974	-4.2	1973-74	9.4	1974	9.4
1974-75	68.9	1975	68.9	1974-75	65.8	1975	65.7
1974-76	85.1	1976	9.6	1974-76	90.3	1976	14.8
1974-77	96.2	1977	6.1	1974-77	83.3	1977	-3.7
1974-78	100.4	1978	2.2	1974-78	67.9	1978	-8.4
Aegean Oil Explorations 1987							
<i>Greece</i>				<i>Turkey</i>			
% change from crisis		Annual % change		% change from crisis		Annual % change	
base year				base year			
1983-87	7.4	1984	16.9	1983-87	19.5	1984	-1.2
1984-87	-8.1	1985	0.6	1984-87	21.1	1985	8.5
1985-87	-8.7	1986	-10.3	1985-87	11.6	1986	13.0
1986-87	1.9	1987	1.87	1986-87	-1.3	1987	-1.3
1987-88	5.7	1988	5.7	1987-88	-11.9	1988	-11.9
1987-89	-0.9	1989	-6.4	1987-89	1.9	1989	15.7
1987-90	0.2	1990	1.2	1987-90	23.1	1990	20.8
1987-91	-5.0	1991	-5.2	1987-91	26.6	1991	2.8
Imia 1996							
<i>Greece</i>				<i>Turkey</i>			
% change from crisis		Annual % change		% change from crisis		Annual % change	
base year				base year			
1992-96	7.1	1993	-2.4	1992-96	20.8	1993	10.6
1993-96	9.8	1994	1.7	1993-96	9.2	1994	-2.1
1994-96	7.9	1995	2.1	1994-96	11.5	1995	2.4
1995-96	5.7	1996	5.7	1995-96	8.9	1996	8.9
1996-97	6.4	1997	6.4	1996-97	-5.3	1997	-5.3
1996-98	15.7	1998	8.8	1996-98	-0.8	1998	4.8
1996-99	21.7	1999	5.2	1996-99	17.8	1999	18.8
1996-00	25.9	2000	3.4	1996-00	27.9	2000	8.6

A further example is the 1996 Imia crisis in which a military confrontation was again narrowly averted. In the aftermath of the crisis, Greece immediately stepped up its weapons acquisition program. Having more or less tackled the fiscal problems of the late 1980s, Greece could now afford to allocate more funds to its military establishment and improve its defence capability vis-à-vis Turkey. The impact of this new procurement program gradually affected the level of military expenditures in the years that follow (Table 3). Thus in 1996-97, Greek military spending increases by 6.4%, in 1996-98 by 15.7%, in 1996-99 by 21.7% and by the year 2000 compared to 1996 (the year of the crisis) it has grown in real terms by about 25.9%. Turkish military spending on the other hand exhibits a different trend. It declines by 5.3% between 1996-97, by 0.82% in 1996-98 and increases by 17.8% in 1996-99 (18.8% in 1998-99) and by 27.9% in 1996-2000 (8.6% in 1999-2000). The picture changes if instead of total military expenditure we concentrate on equipment spending by the two countries. Greek equipment expenditure falls by about 2% in 1996-97 but steadily increases afterwards by 13.4% in 1996-98, 11.9% between 1996-99 and 9.2% by 2000. Turkish equipment spending on the other hand exhibits a different trend. It falls by 8.7% in 1996-97 and by 27% between 1996-98. Then it starts increasing again. In 1999 it grows by 36% and by a further 43.2% in 2000. Compared to 1996, Turkish equipment expenditure has increased by 42% in real terms.

Morrow<sup>7</sup> points out that defence expenditures of two rivals engaged in arms competition may over time oscillate around a general trend and/or “*equilibrium relation*” as the two countries try for example, to juggle the dual problems of defence needs and the economic burden their armaments represent. If this is the case, weapons competition as this may be reflected by military expenditures, may not be a smooth upward process but rather a series of jumps from one level of armaments to another as the one country responds to increases in the military capability of the other and so forth, aiming at maintaining what it considers as an acceptable balance of military strength between itself and its rival. In other words, responses to military acquisitions between rivals may be asynchronous determined, among other things,

by economic constraints and domestic policy priorities. But if they are asynchronous and they result in swings in the military balance between a dyad of countries, the question that arises is whether countries exploit these swings to advance their interests through the use or the threat of use of military force. In other words, it is possible that as a country finds itself in a state of temporary military advantage over its rival, will attempt to capitalize on this advantage. If this is the case then one should also be looking at changes in military spending before the year of the escalation and military crisis. Increases in military expenditure before the year of the military crisis may be interpreted as a sign of military preparations, which upset (or aim to upset) the existing military balance between two powers. As one of the two finds itself in an advantageous position it uses its temporary military superiority to achieve its objectives vis-à-vis its rival. It can be seen from the data in Table 3 that in the case of the Cyprus escalation in 1974, between 1970-74 Turkish military expenditure grew by 39.7% while Greek by 7.8%. The average annual increase for the three years before the Turkish invasion, i.e. 1971-73, was 8.66% for Turkey and 4.07% for Greece. In 1987 the average annual increase for 1984-86 was 2.39% for Greece and 6.75% for Turkey while between 1983-87 military spending increased in real terms by 7.4% for Greece and 19.5% in the case of Turkey. The pattern does not change in the Imia crisis either. Between 1992-96 Turkish military spending increases by 20.8% while the corresponding increase in the case of Greece is 7.1%. The three-year average before the crisis, i.e. 1993-95, is 0.47% for Greece and 3.63% for Turkey. In all three cases used here, a significant asymmetry in the growth rates of military expenditures is recorded a few years before the military crisis. This asymmetry in the growth rates may be reflecting changes in the military strength balance that eventually present the opportunity for one of the two to militarily challenge the other. In 1974, Turkey invaded Cyprus, in 1987 Turkey attempted oil explorations in disputed areas of the Aegean and in 1996 it disputed the sovereignty of Greece over the island of Imia. In all three cases, in the years before the crisis Turkish military expenditure grew faster than Greek. Although such expenditure can hardly be a satisfactory index of military strength it can nevertheless serve as an

approximation in the absence of something better. The asymmetries in the growth rates may reflect swings in the balance of strength in favour of Turkey that then proceeds to use this advantage to achieve its objectives.

A further important issue is that of the time period for which we are trying to examine whether the two countries have been engaged in a systematic armaments race. The frequent structural changes in the international as well as the domestic environment are important obstacles in any attempt to examine whether countries are arms racing. Such changes may include the outbreak of war, changes in the national leadership with the concomitant changes in defence and security policy, changes in threat perceptions, changes in the national economy from which the resources are drawn for the defence sector, the appearance of new security concerns (international or domestic) that may at least partially shift the attention of security decision makers and defence planners for longer or shorter time spans.

Clearly, such factors are important when it comes to the Greek-Turkish case and raise the question of what time period one should use when investigating the arms race hypothesis. Throughout the post war period important changes and developments have occurred which have affected both their bilateral interaction as well as the security concerns and priorities the two countries have faced over the last fifty years. It follows logically that these changes have also affected their respective defence policies.

In the case of Greece, the main security concern during the 1950s was the communist threat, both external in the form of the Warsaw Pact and Greece's northern neighbors, but also internal. However, from the 1960s a gradual and lasting shift took place in the country's security concerns and defence priorities. The perceived threat from its northern neighbours gradually diminished to the point of disappearing making room for a more *traditional* security concern and military threat, that of Turkey, which rapidly increases in importance to the point of becoming imminent.<sup>8</sup> The growing tensions over Cyprus and the 1963 Turkish military intervention which was narrowly averted

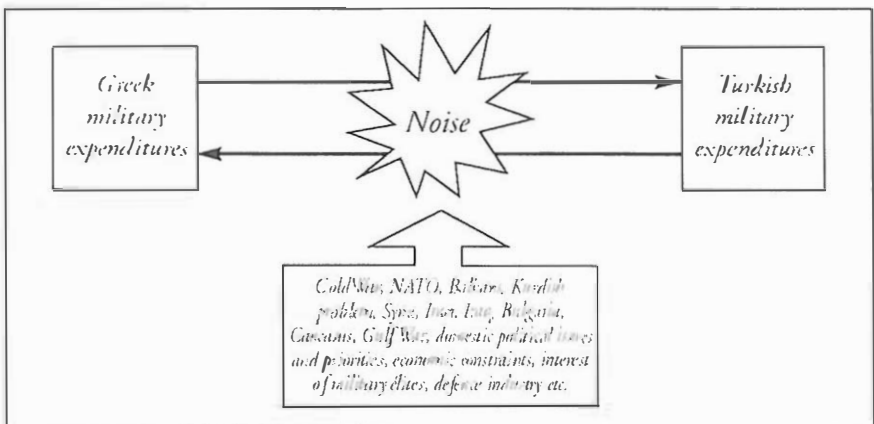
after stern US diplomatic intervention and would probably have sparked a Greek-Turkish war, mark the start of an important shift in defence policy. In fact, from this point on, Greek (and Turkish) defence policies for the first time in the post-war period allow for the possibility of an outright war between the two countries. The 1974 Cyprus invasion by Turkey marks the total shift in Greek security concerns and priorities, military threat perceptions and defence planning. The concomitant cost of this shift may be seen in the increases in military spending over the following years (Table 3, Figure 2). Since 1974, Greek defence policy had remained unaltered in its essentials and declarations such as the *New Defence Doctrine* in 1985 constitute official declarations of strategies and defence policies adopted in the past and did not affect strategic commitments or force deployment. Similarly, the declaration of the *Joint Defence Area* between Greece and Cyprus in 1993 was largely the official seal of Greece's extended deterrence and military commitment in Cyprus. Despite the important changes that have followed the end of bipolarity and the flare up of the Balkans, Greek security concerns and military threat perceptions vis-à-vis Turkey remained essentially unchanged. The preceding brief discussion about changes and fluctuations in Greek security concerns raises the following question: should one include the 1950s in the period for which the Greek-Turkish arms race hypothesis is examined or concentrate only on the post-74 period onwards?

Similar changes that may have affected defence planning and spending in Turkey have also occurred. Since the mid-1980s and up to the late-1990s, Turkey faced serious internal security problems that escalated to almost full-scale war in its southeastern provinces against the Kurdish uprising. The war that the Turkish forces have waged against the PKK guerillas for more than a decade undoubtedly placed serious pressures on its defence budget. In fact, a substantial part of the large increases in Turkey's military expenditures over the past decade may be partly attributed to this internal war and less to defence concerns over Greece. Again, the question is whether one should include this period during which Turkey is engaged in serious internal military conflict - with the concomitant impact on its military expenditure - in the analysis of the Greek-Turkish arms race hypothesis.



To complicate matters further, one may cite a host of other factors that temporarily, periodically or even more permanently influenced defence expenditures in either country. As Leidy and Staiger point out, the underlying determinants of a country's perceived external security and defence requirements are numerous, and the way in which they combine to dictate military expenditures extremely complex. Among the determinants that can be cited in the Greek-Turkish case are the Cold War, the Gulf War, country-specific external security concerns such as Iran, Iraq, Syria, Bulgaria (in the case of Turkey) or Bulgaria, Albania and the former Yugoslavia (in the case of Greece) before the end of the Cold War. One may also add internal security factors, such as the Kurdish problem in Turkey, the effects of military alliance membership, e.g., NATO. There are also domestic economic constraints that influence the level of defence spending (the current Turkish economic crisis is a typical example of the impact of economic constraints on defence budgets) and other domestic issues and priorities such as the "guns or butter dilemma" that recently arose in Greece, as well as the influence of various interest groups such as military élites. All these may be treated as "external noise" that can not easily be isolated and thus hinders the examination of the underlying relation between Greek and Turkish military spending (Figure 4). Assuming of course, that such an action-reaction relation does exist. But does an arms race exist only if a bi-directional causal relation is established?

**Figure 4: Determinants of Greek and Turkish military spending**

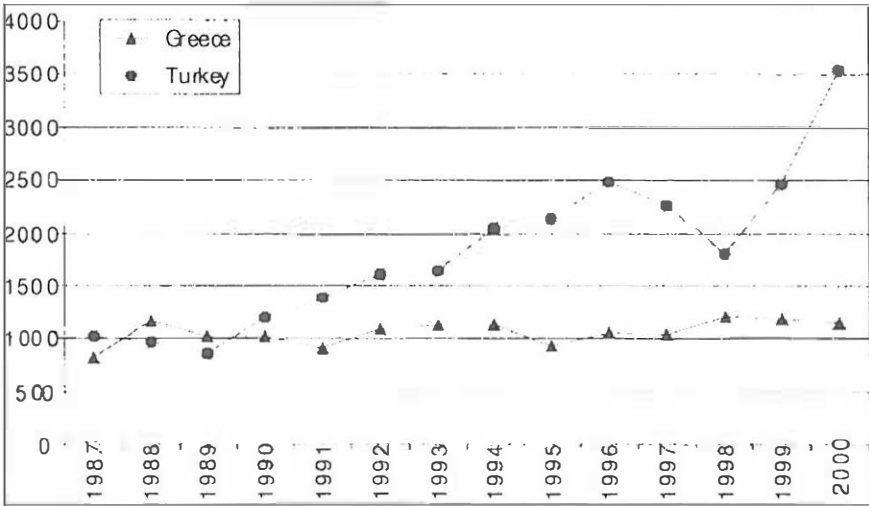


Defence spending is a function of a number of determinants – economic constraints, alliance membership, external and internal security concerns, domestic policy priorities, military élites – that with different and time varying weights influence the level of such expenditure. More specifically, since a country's military expenditure is determined by a number of different security needs – both internal and external – each one with a different and time varying weight, the perceived military threat posed by the rival country is only one, albeit important, determinant of military spending.

In the case of Greece and Turkey, their respective security needs and priorities driving defence spending are quite different. More importantly they have changed fundamentally over the years. In Greece's security agenda, Turkey – although not the single security concern – may rank as the most important threat to its interests. However, this may not be the case for Turkey. For example, in Turkey's security agenda, the internal issue of the Kurds has ranked extremely high and has undoubtedly affected, although it is not clear to what extent, the country's defence spending and armaments program over the past decade or so. Of course, this was not the case in other periods such as from the mid-1960s to perhaps the mid-1980s when disputes with Greece, (Cyprus and the Aegean) probably dominated the Turkish defence agenda. Similarly, Greece's other neighbours present, in comparative terms, less of a military threat to its security than Turkey's neighbours. The Turkish weapons build-up, especially in the post Cold War period, may thus be attributed in part to external and internal security needs not shared by Greece. Since, however, Turkey figures high in Greece's security agenda as the main military threat, its weapons build-up causes Greece to respond by strengthening its military capability to avoid falling behind its rival. This raises the question posed earlier: does an arms race exist only if a bi-directional causal relation is established? What if Turkey armed itself in order to meet increased security needs that are not entirely determined by Greece's military strength? But, it is possible that this strengthening of Turkey's military capability increases the insecurity felt by Greece which responds by increasing its armaments in order to prevent the military strength gap vis-à-vis its main rival to widen or the existing balance to

be upset. The argument can be further extended. What if this narrowing of the gap by Greece, which does not wish to fall behind, causes Turkey to step up its armaments so that not to allow Greece to catch up? In this way both countries enter in an upward armaments spiral the dynamics of which are not wholly determined by security concerns over each other. The actions of the one of the countries in our dyad aimed to increase its security or to meet new security threats, reduce the security felt by the other and force it to increase its defence capability vis-à-vis its rival.

**Figure 5: Equipment expenditures by Greece and Turkey 1987-2000**



\*SIPRI data in constant 1998 prices

Over the past one and a half decades for which data are readily available, Turkey has been implementing a massive armament program. In real terms, its equipment expenditure has risen by about 345% in the period 1987-2000 (Figure 5). The corresponding increase for Greece is about 142%. During this period, the average annual growth rate of equipment expenditure for Greece was 4.1% and 11.8% for Turkey.

For the post bipolar period i.e. 1990-2000 the average annual growth rates were 1.6% and 15.5% respectively. Even if this weapons build-up by Turkey is wholly driven by factors not associated with security concerns and military needs *vis-à-vis* Greece, it nevertheless increases the military insecurity felt by the latter. This causes a reaction in order to avoid falling behind since the weapons accumulated by Turkey can potentially be used against Greece if deterioration in their bilateral relations leads to a military confrontation.

Current defence capability is the result of decisions made by defence planners in the past. Current defence decisions determine future defence capability and balance of military strength between rivals. Defence planning and decisions are made under conditions of uncertainty. If no observable change in the rival's long-term strategy is evident, then defence planners will tend, at least partially, to decide upon past experience. If the rival's behaviour and/or actions in the past were – or were perceived to be – aggressive and hostile, then a “*better safe than sorry*” attitude will tend to dominate defence planning and decisions. If a rival has behaved aggressively in the past, defence planners will tend to assume that there is no reason to expect it will not do so again in the future. Even more so if the rival has in the past relied or used its military strength either to extract concessions or to advance its interests by force.

Based on the experience of past behaviour, claims over sovereign rights, the use of military power in Cyprus, frequent statements by Turkish officials, Greece perceives Turkey as a revisionist power and a long-term threat to its national interests. Even if their current bilateral relations are not tense, disagreements over important issues and long-term disputes help sustain the perception that Turkey poses a long term threat despite short-term improvements in bilateral relations. Consequently, if this is the timeframe security planners use, the need to maintain a credible military deterrence is unaffected by short-term fluctuations in Greek-Turkish relations. Suspicion over each other's long-term intents and strategy is at least partially driving their weapons accumulation.

## CONCLUDING REMARKS

In comparative terms, Greece and Turkey allocate a substantial part of their national income to defence. In the post-Cold War period, contrary to international trends, both have increased their military spending in real terms. The issue of a systematic arms race between the two remains, at best, empirically unresolved. This absence of empirical verification does not necessarily imply that the two countries are arming independently.

The important and as yet unresolved issues dividing the two countries form a fertile ground in which mutual suspicion over long-term intentions and threat perceptions flourish. In their security agenda and defence planning, mutual concerns over each other are an important long-term determinant of their military spending. With a time varying weight and to different extents, each other's military strength and preparations have influenced their respective defence expenditures and perhaps have fueled an arms race. Since defence planning takes place with a medium- to long-term horizon and is affected by a multitude of often interdependent factors, such as economic constraints and security concerns, that are dynamic in nature and ever-changing, it is probably futile to attempt to establish an action-reaction régime between Greek and Turkish military spending. There are, of course, also the limitations associated with this measure of military capability. Although by no means evidence of a causal relation, the correlation between the two time-series points to the presence of a long-term relation. However, for shorter time periods, this relation is affected by other factors of both external and internal nature such as economic constraints and other domestic or external security concerns.

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#### NOTES

1. A comprehensive survey can be found in Brauer, J. (2002) "Turkey and Greece: a comprehensive survey of the defence economics literature" forthcoming in C. Kollias & G. Gunluk-Senesen *Greece and Turkey in the 21<sup>st</sup> Century. The Political Economy Perspective*.
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5. For reasons of data compatibility all data used here are taken from SIPRI Yearbooks.
6. Correlation is the degree of linear relationship between two variables. The correlation coefficient assumes values between  $-1$  and  $+1$ . If one of the two variables tends to increase as the other decreases then the correlation coefficient is negative. If both variables tend to increase together then the correlation coefficient is positive. The closer to unity the correlation coefficient is, the stronger the correlation between the two variables.
7. Morrow, J. (1989) "A twist of the truth: a re-examination of the effects of arms race on the occurrence of war", *Journal of Conflict Resolution*, Vol. 33, No 3.
8. See for example Platias, A. (1991) "Greece's strategic doctrine: in search of autonomy and deterrence", in Conostas, D. [ed].